

Claims

1. An integrated switch-indicator unit, comprising:
a light emitting diode structure for providing a plurality of indicators; and
an overlay input device integrated with the light emitting diode structure, the overlay input device comprising:
a non-conductive substrate; and
a plurality of conductive electrode pairs formed on the substrate, wherein each of the electrode pairs forms a proximity sensitive region and includes a first electrode that receives an input signal and a second electrode that provides an output signal, and wherein the first and second electrodes of each of the electrode pairs are capacitively coupled and the capacitance of each of the electrode pairs changes when a conductive member is located near a given one of the electrode pairs.
2. The unit of claim 1, wherein the substrate is flexible.
3. The unit of claim 1, wherein the substrate is one of a glass substrate and a plastic substrate.
4. The unit of claim 1, wherein the non-conductive substrate is transparent and the plurality of conductive electrode pairs are transparent.
5. The unit of claim 1, wherein the light emitting diode structure and the overlay input device share a common electrode structure.
6. The unit of claim 1, wherein the light emitting diode structure is one of an organic light emitting diode (OLED) structure and a polymer light emitting diode (PLED) structure.

7. The unit of claim 1, further including:

an integrated controller/bus access integrated circuit (IC)

coupling the light emitting diode structure and the overlay input device to an automotive bus, the IC controlling the illumination of the light emitting diode structure to identify a location and function of a switch and sensing when the capacitance of one of the electrode pairs changes to indicate a switch input.

8. The unit of claim 1, further including:

a first transparent non-conductive cover formed on the substrate over the electrode pairs.

9. An integrated switch-indicator unit, comprising:

a light emitting diode structure for providing a plurality of indicators; and

an overlay input device integrated with the light emitting diode structure, the overlay input device comprising:

a non-conductive substrate;

a plurality of conductive electrode pairs formed on the substrate, wherein each of the electrode pairs forms a proximity sensitive region and includes a first electrode that receives an input signal and a second electrode that provides an output signal, and wherein the first and second electrodes of each of the electrode pairs are capacitively coupled and the capacitance of each of the electrode pairs changes when a conductive member is located near a given one of the electrode pairs; and

a first non-conductive cover formed on the substrate over the electrode pairs.

10. The unit of claim 9, wherein the substrate is flexible.

11. The unit of claim 9, wherein the substrate is one of a glass substrate and a plastic substrate.

12. The unit of claim 9, wherein the non-conductive substrate is transparent, the plurality of conductive electrode pairs are transparent and the first non-conductive cover is transparent.

13. The unit of claim 9, wherein the light emitting diode structure and the overlay input device share a common electrode structure.

14. The unit of claim 9, wherein the light emitting diode structure is one of an organic light emitting diode (OLED) structure and a polymer light emitting diode (PLED) structure.

15. The unit of claim 9, further including:
an integrated controller/bus access integrated circuit (IC)
coupling the light emitting diode structure and the overlay input device to an automotive bus, the IC controlling the illumination of the light emitting diode structure to identify a location and function of a switch and sensing when the capacitance of one of the electrode pairs changes to indicate a switch input.

16. An integrated automotive switch-indicator unit,
comprising:

a light emitting diode structure for providing a plurality of indicators, wherein the light emitting diode structure is one of an organic light emitting diode (OLED) structure and a polymer light emitting diode (PLED) structure;

an overlay input device integrated with the light emitting diode structure, the overlay input device comprising:

a non-conductive substrate;

a plurality of conductive electrode pairs formed on the substrate, wherein each of the electrode pairs forms a proximity sensitive region and includes a first electrode that receives an input signal and a second electrode that provides an output signal, and wherein the first and second electrodes of each of the electrode pairs are capacitively coupled and the

capacitance of each of the electrode pairs changes when a conductive member is located near a given one of the electrode pairs; and

a first non-conductive cover formed on the substrate over the electrode pairs; and

an integrated controller/bus access integrated circuit (IC) coupling the light emitting diode structure and the overlay input device to an automotive bus, the IC controlling the illumination of the light emitting diode structure to identify a location and function of a switch and sensing when the capacitance of one of the electrode pairs changes to indicate a switch input.

17. The unit of claim 16, wherein the substrate is flexible.

18. The unit of claim 16, wherein the substrate is one of a glass substrate and a plastic substrate.

19. The unit of claim 16, wherein the non-conductive substrate is transparent, the plurality of conductive electrode pairs are transparent and the first non-conductive cover is transparent.

20. The unit of claim 16, wherein the light emitting diode structure and the overlay input device share a common electrode structure.